

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A method of processing oscillatory response data from a resonant system comprising:

obtaining data measuring an oscillatory response of the system;
estimating ~~the variation~~ a variation in natural frequency of a mode of said response;
filtering the data around a selected frequency to obtain a filtered response;
determining a carrier signal whose frequency variation with respect to time is equal in magnitude to said estimated variation in natural frequency; and
modulating ~~the amplitude~~ an amplitude of said carrier signal using said filtered response to obtain a modulated carrier signal.

2. (Currently Amended) A method according to claim 1 wherein the frequency of the carrier signal is greater than ~~the difference~~ a difference between the highest and lowest values of the natural frequency of said mode over ~~the period~~ a period of interest.

3. (Currently Amended) A method according to claim 1 wherein said step of estimating ~~the change~~ the variation in natural frequency includes calculating a running average of the instantaneous frequency of the response.

4. (Currently Amended) A method according to claim 1 wherein said step of estimating ~~the change~~ the variation in natural frequency includes obtaining time averaged Fourier transforms of the ~~measured~~ data measuring the oscillatory response.

5. (Previously Presented) A method according to claim 1 wherein the selected frequency is the natural frequency of the mode in said step of estimating.

6. (Previously Presented) A method according to claim 1 wherein the selected frequency is an engine order frequency.

7. (Previously Presented) A method of analysing a resonant system comprising:
performing the method of claim 1; and
analysing the modulated carrier signal to determine a characteristic of the system.

8. (Original) A method according to claim 7 wherein the step of analysing includes determining characteristics relating to the bandwidth of the mode.

9. (Previously Presented) A method according to claim 7 wherein the step of analysing includes determining a power spectral density function.

10. (Previously Presented) A method according to claim 1 wherein the system is a model system.

11. (Previously Presented) A method according to claim 1 wherein the system is a mechanical system.

12. (Original) A method according to claim 11 wherein the system is a gas turbine engine or a component thereof.

13. (Currently Amended) An apparatus for processing oscillatory response data from a resonant system, the apparatus including:

a processor which is adapted configured to:

receive measurement data relating to an oscillatory response;

estimate from the data ~~the variation~~ a variation in natural frequency of a mode of said response;

filter the data around a selected frequency to obtain a filtered response;

determine a carrier signal whose frequency variation with respect to time is equal in magnitude to said estimated change in natural frequency; and

modulate ~~the amplitude~~ an amplitude of said carrier signal using said filtered data.

14. (Currently Amended) An apparatus according to claim 13 further including a sensor for measuring an oscillatory response of the system, wherein said processor is adapted configured to receive said measurement data from the sensor.

15. (Original) An apparatus according to claim 14 wherein the oscillatory system is a mechanical system.

16. (Original) An apparatus according to claim 15 wherein the mechanical system is a gas turbine engine or a component thereof.

17. (Original) An apparatus according to claim 13 wherein the system is a model system, and the processor is part of a computer.

18. (Currently Amended) An apparatus according to claim 13 wherein the frequency of the carrier signal is greater than ~~the difference~~ a difference between the highest and lowest values of the natural frequency of said mode over ~~the period~~ a period of interest.

19. (Canceled)

20. (Canceled)

21. (New) A computer-readable recording medium encoded with a computer program for processing oscillatory response data from a resonant system, the processing including:

obtaining data measuring an oscillatory response of the system;
estimating a variation in natural frequency of a mode of said response;
filtering the data around a selected frequency to obtain a filtered response;
determining a carrier signal whose frequency variation with respect to time is equal in magnitude to said estimated variation in natural frequency; and
modulating an amplitude of said carrier signal using said filtered response to obtain a modulated carrier signal.